

Figure 2A continued

1841 CCGAGGATTG AACAAAGTTG ATGTTCCCGT ATTTATTGCA GGAGCCAGAG AAGAAAGTGG AAAAATCTAC ACCACAGGCG
>.....purD.....>

1921 GGC GCGTGCT CAATGTGGTG GGAAC TGGCG CTACGCTAGA AGAAGCCAGA AAAGTGGCTT ACGAAAATAT CCATAAAATC
>.....purD.....>
GAGATCTGG>>.....OE-F.....>>

Bg1II

2001 AATTTTGATT ATGAATATTA TCGCGAAGAC ATCGGGAAGA TATAATCTCG CTGATTTTTA ACCAAAACAT ATTTAAAAAC
>.....purD.....>>

2081 GCTTTTGTTA CTTTTATAAA CAAAGGCGTT TTTCTATTTT TGTGCCACTA TAACATGATT TAACCCATGA AAAAATACT

2161 AAAAATACTC ATTTTCTAC TGCTCATTC TGGGTTTAT GCCCTGATT TAATCTTTAT AAATCCACCT ATCACCATTA

2241 CACAGCTGAG CAATTTATCT TATGGTTTCT CCAGAACACA GCTCGCTTAT GATGAAATTC CGGCTAGTGC TAAATGGGCT

2321 GTAATTGCAG CAGAAGACCA GAATTTTGCC ATTCATAATG GCTTTGATTT TAAAGAAAT AAAACCGCCT ACGAGAAAAA

2401 CAAAGCGGGC AAGAAATTGC GTGGCGGGAG CACCCTTTCG CAACAACTG CCAAAAATGT ATTTTGTGG CAAGGGCGCA

2481 CTTGGATTAG AAAAGGATTG GAAACCTACT GCACCTTTAT CATCGAAGC CTGTGGAGCA AGGAGCGTAT TTGCAAGTT

2561 TACCTCAACA ATGCCGAAT GGGCAAAGGC GTTATGGCA TAGAGGCAGC GCGCAATAT TATTTAAGA AAAACGCCTC

2641 ACAGCTCAGC CCTACCGAGA CGGCACGCAT CATTCCTGC CTGCCAATC CAAAAAATA CAATNTAAC CCGCCAAGTG

2721 CCTACATCTC AAAACGCGGA CAATGGATTG TGCGCCAAGT GCGAACTTG AAAGGCGATA GGGCTCTGAG CGAGATTGTG

2801 AACACGCCCT AACGCCTGCC TCAACTCTTT GCACACAGTT TACCAACTCT CTGCGAAGAG TTCACAACT CTCGCACAC

2881 ACTTCCCAA GTCTTTGCAA AGAGTTGGGA GATACTTAGG CACAAAAAA AGGAACCTCA TGAATAGAGG TTCCCTCTTC

2961 CTTAAAAGGA ATAAATAATA ATGTTTTTA AGCTTTAGGC TTGGCTACTT TTCAAAGCC TGCTGCCTTC ATGCTATCTA

HindIII

3041 GGATACGCTT GCCTGGGCGG TAGTTACGC CTACCTTTTT GATTAAGCC GAATGAAAT CTTTCTCTGT ATCTGCCGCT
<<.....R8.....>

3121 CCACTGCTTA AAGTGGCATA GAGCGAGCCA AGCTTATCTA AACGAACGAT TTGCCCCGCT GCCAAGGCGT CTTGAATTAC
<R8.<<AAGCTTAAG

HindIII HindIII

3201 ATTCTCTAGC GCAATGATAA CGCCACGAAT ATCTGCCTCG CTGAGTGCCG AAAACTTCTC GATTTGCTTA ACGAGCTGGT

3281 CTATATCCAT TTCTCCATCG CTTGCCACCA CGGCATAGTA TTTTGTGGC TCCCTGGCT TGCTTGGGT TCTACGCTGA

3361 ATTACATTGT ATTTTATGCT CATAATTACT CTATTTTAA TAGCCTCCCG ATGGATATAA AGTTACGCTA CAATTAGGCT

3441 CTCCATAAGC AAATCTATAC CCCTCTCTTT CATATTCCCT TCTCATCTT CTTGCTCCAT CTCTCAAGGC ATCCGCTCTA

3521 TTAGTGCTAT ACCCCTCCTG AAGAAATGTG TCTGCACTTG AAGAAGAATA TGAAGAGCTA TGAGAATCGT GCAACATAGT

3601 CCAAGCTCCA TCTTGAGCTA TAACATTTGC ATGACATGTA ACACCTATAG TATAATAAAA TCTCCTAGGA GGTGTGTTC

3681 CACCACCACC TCCAGAGCTA CTACTTTTTT TACATTGTCC ATTTTGGTTA GCATGATTTT GTCCGCCATC ACTTACTAAC

3761 TTCTTAGCTT CTGCTAAGGC TTTTCTCTT GCTTCTTTT CAGCATCTGC TTGGCTAAT CCACCTACTG CTGTAGCTGT

3841 CGCTTCTTTT TTATAGTTTA CCGAGGTTCC ATAATAGCCA CTACTACAAT TGTTCCTTGT AAAGTTTTTA TAAAAGATT

3921 GAGTTTGTGT TGAGGTGTAC CCTCCGAAAC CTTTACTTC TACAGTAAAG GTAGAACTCC CCATGCTTAC GGGGAAGGTG

4001 GCGATAGTAT ACGATTGCCC TGCCGGCATT TGTTTTACTT GATACACTCC ATCTCCTCCC ACTTCTATGC TTGCGTTAA

Figure 2A continued

4081 ATTACCACTA CCGCTAAAAG AGCCTTCTGC TATTTTITAGT GTTAAATCAT TTATATCCCC TCCTTGTCTT TTTGCAGAAG
4161 CTTTGTGTTAC ACTTACAGCA TCATAAGCTC CTTTTCATT GGTATAAGGT ATTTATATGG CCAAAC

Figure 2B continued

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1681 CAACCAATTG AGAGAGAAAA TCGGTGTGAT GTTCGGTAGT CCAGAAACCA CAACGGGTGG TAATGCACTT AAATTCTATG
>.....recA.....>

1761 CATCGGTGCG TCTAGACATT CGTCGTTCTA CTCAGATTAA AGATGGGAAC GATGTCATCG GAAACTTGAC TCGCGTAAAA
>.....recA.....>

1841 GTAGTGAAAA ACAAGTAGC TCCGCCATTC CGTAGTGCAG AATTCGACAT TATGTATGGC GAAGGAATCT CTAAAGCAGG
>.....recA.....>
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BcoRI

1921 CGAGATTTTA GACATTGCTA CCGATTAGA AATCGTGAAA AAAAGTGGCT CTTGGTATTC TTATGCAGAT ACTAACTAG
>.....recA.....>

2001 GACAAGGGCG AGATGCCGTG CGTGCGGTAT TGAAGATAA TCCAGAATTA GCCGAAGAAT TAGAAGAGAA AATTAAAGAA
>.....recA.....>
CGAGATCT>>.....OEF1.....>>
-----
BglII

2081 GAATTAGAGA AAAAATAGAT TTTTAGTTT TTTTAATTAA ACGAAAAATC CGTTCACCTT GTTGAACGGA TTTTATTATG
>.....recA.....>

2161 CTTGAATGAA TTTATTTCCA ATGGATTGAA TAGCCATGCA CTTTAAATC TTCGCTATCA TAAGTGATTT CTTGTGCGGT

2241 GTTGGGATAG CAAACTTTAA GTCCTGCGTA TTTGGCAATG GCATGTCCTG CGGCAATGTC CCAAAAGTTT ACAGGTCTAA

2321 AGCGGGTGTA CTCCGTAGCC CACCGATCGG CAATTAGCCC AAGTTTGATA ACGCTTCCCA TAGGCTTTGT GCGGAAAATT

2401 TCATGTTGCG ATTAAATTTT TTTGATGTAT TCCTCGGTGC CAGGATCCAT GTGGAATTG CTACAAAGAA AAGTGTAAATC

2481 TTCGGGCAAA TCCATGGTAG GAATTGGCTT GCTGTGTTTC ATCAATTGTT CAAAAAATC CGATTTTCTA GCCATTTTGT

2561 GCAATTGTTG TTGAGTCCCG ATGAATTTAC GAGAAGGGCA TTTATCGCTA CCGAAATAGA ACAATCCAAG CGATGGGGCG

2641 TACAAACTC CTAGCTTAGC CGTATTATTC TCACTAAGC CTAGACACAC GCAATATTCA TCTGTTTTGT TGACAAATC

2721 CATGGTGCCA TCAATAGGGT CTGCAATCCA ATAGGTGGGC GTATTTCTAA TTTCTTGTA AGAATCCTTA TCTCCTTCCT

2801 CACTAAAGTA TGAATGTCT GTAAAGGAAA CATGTTTTTG CAAGATTTTG TTGGCGGCTA AATCTGCACT TGTACAGGC

2881 GATCCGTCGG CTTTGGTCTC GGTGGAGAAT CCGTTTTGGA TTGTTTTAA ACCTCTTCGC CAGCAAGTGC TACAGCCCGT

2961 GTTGGGATTT CTAATAAATT CATAATCATT CTTTTATTCT CGAACAAAGT CAAATAATTC TCTGTATTAA AAAATAATTT

3041 TGGCGATAAA AATTAAATTT TATATATAAA ATATCTCTGC AAAAAACCA ATCAAATATT TAGTGAAATA AAAAAATTA

3121 GATTGTAAAT TTGCCTTATG TTTTAGAGA ATACCATAAA TCATAGAAA AATACGGGCT GGATCGAAGT AATCTGTGGC

3201 TCTATGTTT CGGGCAAAAC CGAAGAGTTG ATTCGTAGAG TGAACGAGC CGAATTGGCT GGGCAAAAGG TAGAAATCTT
<<.....R5.....<<AAGCTTAAG
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HindIII

3281 TAAACCCGCA ATTGATAAAC GCTACGATGA GCAAGATGTG GATCGCATG ATGAAAACAA AAAACAAGCA ACCCGATTG

3361 AGGCGAGTTC TAACTTGCCC ATTTTAGCAA GCGATTGTGA TGTGGTGGGG ATAGATGAGG CTCAATTCTT TGACGAAGGA

3441 ATTGTTGAGG TGGCAATCT TTAGCTAAT TCGGGGAAAA GAATAATTAT TGCGGGATTA GACATGGATT TTAAGGTGCG
<<.....RrecAORI.....<<

3521 TCCATTTGGT CCTATGCCAA ATTTAATGGC GGTAGCGGAA TATGTACCA AAGTGCATGC AATCTGTGTG AAAACAGGGA
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Figure 2B continued

table 5

group	no. of chickens	Treatment				Results	
		no. of chickens	vacination at day 1	challenge at day 25	challenge at day 31	% of max airsac score at day 10 (safety)	% of max airsac score at day 38 (efficacy)
1	25	NDV	RecA aerosol	NDV	WT-OR aerosol	2.5	25 ^b
2	25	NDV	PutD aerosol	NDV	WT-OR aerosol	7.5	23 ^b
3	25	NDV	WT-OR aerosol	NDV	WT-OR aerosol	68	10 ^b
4	25	NDV		NDV	WT-OR aerosol	0	47
5	25	NDV		NDV	NDV	0	2

^b Significantly different (p<0.05) compared to the controls (group 11) using two-sided Mann-Whitney U test

Figure 2B continued

table 6

group	no. of chickens	Treatment			Results
		vaccination at day 1	day 30	challenge day 35	
1	15		NDV	WT-OR aerosol	no reduction
2	15	NDV	NDV	WT-OR aerosol	54% ^b
3	15	NDV	NDV	WT-OR aerosol	no reduction
4	15	MAS	NDV	WT-OR aerosol	no reduction
5	15	MAS	NDV	VT-OR aerosol	50% ^b

^b Significantly different (p<0.05) compared to the controls (group 1) using two-sided Mann-Whitney U test